

CLAIMS

What is claimed is:

1. A wireless device for seamless roaming among one or more wireless wide area networks (WWANs) and one or more wireless local area networks (WLANs), the wireless device comprising:

- a user interface enabling a user to interact with the wireless device;
- one or more network interfaces coupled to the wireless device and to the one or more WWANs and the one or more WLANs;
- an operating system running on the wireless device;
- a connectivity application running on top of the operating system and including:
 - a user interface component coupled to the user interface;
 - a core component coupled to the user interface component; and
 - one or more network interface components coupled to the core component; and
- a driver layer functioning on top of the operating system and coupled to the one or more network interface components and to the one or more network interfaces.

2. The wireless device of claim 1, wherein the user interface comprises:

- an input device, the input device including at least one of:
 - a keypad;
 - a touch screen;
 - an input port;
 - a pointing device; and
 - a microphone; and
- an output device, the output device including at least one of:
 - a video display;
 - an output port; and
 - a speaker.

3. The wireless device of claim 2, further comprising at least one graphical user interface (GUI) having a plurality of interactive devices designed to facilitate the user interaction with the wireless device via the input device and the output device.
4. The wireless device of claim 1, wherein the one or more network interfaces comprises at least one of:
 - a WWAN interface and a WLAN interface; and
 - a combination WWAN/WLAN interface.
5. The wireless device of claim 4, wherein the WWAN interface and the combination WWAN/WLAN interface are capable of coupling to at least one of:
 - an analog cellular network;
 - a digital cellular network;
 - a TDMA network;
 - a CDMA network;
 - a 1xRTT network;
 - a GPRS network;
 - a GSM network;
 - an EDGE network;
 - a UMTS network; and
 - an iDEN Packet Data network.
6. The wireless device of claim 4, wherein the WLAN interface and the combination WWAN/WLAN interface are capable of coupling to at least one of:
 - an IEEE 802.11 network;
 - a HomeRF network;
 - a Bluetooth network; and
 - a HiperLAN network.
7. The wireless device of claim 4, wherein at least one of the WWAN interface, the WLAN interface and the combination WWAN/WLAN interface is implemented by hardware.

8. The wireless device of claim 4, wherein at least one of the WWAN interface, the WLAN interface and the combination WWAN/WLAN interface is implemented by software.
9. The wireless device of claim 4, wherein at least one of the WWAN interface, the WLAN interface and the combination WWAN/WLAN interface is implemented by both hardware and software.
10. The wireless device of claim 1, wherein the operating system comprises one of:
MS-DOS;
MAC OS;
WINDOWS;
OS/2;
UNIX;
LINUX;
LINDOWS;
XENIX; and
PALM OS.
11. The wireless device of claim 1, wherein the user interface component includes:
a third-generation subcomponent;
a WLAN user interface subcomponent;
an inter-subcomponent communication module coupled to the third-generation subcomponent and the WLAN user interface subcomponent; and
a core interface subcomponent coupled to the inter-subcomponent communication module.
12. The wireless device of claim 11, wherein:
the inter-subcomponent communication module is further coupled to the user interface component; and
the core interface subcomponent is further coupled to the core component.

13. The wireless device of claim 1, wherein the core comprises an active connection selection subcomponent and a rules engine subcomponent, wherein:

the active connection selection subcomponent implements logic to:

detect an availability for the one or more WWANs and the one or more WLANs

via the one or more network interface components;

establish and maintain a connection to a first of the available one or more

WWANs and one or more WLANs; and

communicate the availability and a connection status to the user via the user

interface component; and

the rules engine subcomponent implements logic to:

define selection criteria by which the active connection selection subcomponent

establishes and maintains the connection to the first of the available one or

more WWANs and one or more WLANs.

14. The wireless device of claim 13, the active connection selection subcomponent further implements logic to automatically switch the connection from the first of the available one or more WWANs and one or more WLANs to a second of the available one or more WWANs and one or more WLANs based on the selection criteria of the rules engine subcomponent.

15. The wireless device of claim 13, the active connection selection subcomponent further implements logic to switch the connection from the first of the available one or more WWANs and one or more WLANs to a second of the available one or more WWANs and one or more WLANs based on a manual switching selection of the user.

16. The wireless device of claim 13, wherein the user interface component presents the availability and the connection status to the user via the user interface.

17. The wireless device of claim 1, further comprising one or more other applications running on top of the operating system and coupled to the one or more WWANs and the one or more WLANs via the connectivity application.

18. A method for seamless switching of a wireless device between one or more wireless wide area networks (WWANs) and one or more wireless local area networks (WLANs), the method comprising the steps of:

- detecting available networks from the one or more WWANs and the one or more WLANs;
- selecting one of the available networks for use by the wireless device, the selecting including:
 - searching a rules engine for an applicable rule defining which of the available networks to select; and
 - applying the applicable rule;
- connecting the wireless device to the selected available network; and
- maintaining the wireless device connection.

19. The method of claim 18, wherein the one or more WWANs include at least one of:

- an analog cellular network;
- a digital cellular network;
- a TDMA network;
- a CDMA network;
- a 1xRTT network;
- a GPRS network;
- a GSM network;
- an EDGE network;
- a UMTS network; and
- an iDEN Packet Data network.

20. The method of claim 18, wherein the one or more WLANs include at least one of:

- an IEEE 802.11 network;
- a HomeRF network;
- a Bluetooth network; and
- a HiperLAN network.

21. The method of claim 18, wherein the steps of detecting, selecting, connecting and maintaining are performed automatically.
22. The method of claim 21, wherein the rules engine includes one or more service provider rules.
23. The method of claim 22, wherein the one or more service provider rules include a WLAN preference rule.
24. The method of claim 21, wherein the step of maintaining includes:
monitoring the selected available network connection to determine a connection loss;
upon determining the connection loss, repeating the steps of selecting and connecting.
25. The method of claim 18, further comprising:
communicating the network availability and a connection status to a user of the wireless device; and
enabling the user to manually switch the wireless device connection from the selected available network to another available network.
26. The method of claim 25, further comprising:
facilitating the user definition of selection criteria to be included in the rules engine.
27. The method according to claim 25, wherein step of enabling includes:
detecting an intervention by the user;
determining whether the intervention is a request by the user to switch the wireless device connection from the selected available network;
if the intervention is the request, disconnecting the network device from the selected available network and reconnecting the network device to another available network; and
if the intervention is not the request, ending the network device connection.